It's not me, it's you: the functioning of Wall Street during the 2008 economic downturn

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(forthcoming in *Public Choice*, 2015)

Abstract Public officials have blamed Wall Street and its complex financial products for causing the 2008 economic downturn. This article addresses three popular claims saying that complex financial markets are at fault and need more regulation. It argues that even in the midst of a major economic downturn, the much-maligned mortgage-backed securities, collateralized debt obligations, credit default swaps, and unregistered hedge funds functioned almost exactly as designed. When macroeconomic conditions worsened, firms and investors that were paid to assume certain risks had to assume them. Those that opted for safer investment vehicles with more levels of private protection faced fewer problems. Although many investment vehicles lost money, one must differentiate between problems that manifested themselves in markets and problems with the market itself. Even though government policies caused many of the problems, public officials always have an incentive to point the finger at Wall Street and to argue for more regulations when their policies negatively affect markets.

Keywords market efficiency, housing derivatives, economic theory of regulation, political business cycle

JEL Classification E320, E630, G180, G380, H120

"Politics is the art of looking for trouble, finding it everywhere, diagnosing it incorrectly, and applying the wrong remedies." —Groucho Marx

1 Introduction

Is Wall Street to blame for the 2008 economic downturn, and can more regulation prevent the next one? This article addresses three common misconceptions about how complex financial markets supposedly caused the economic downturn and makes the case that even in the face of many external problems, the markets for widely misunderstood financial instruments such as collateralized debt obligations (CDOs), credit default swaps, and others performed remarkably well. Many problems did arise, but one must differentiate problems that manifested themselves in markets from problems with the market itself.

The first point, which should be obvious but is not to many, is that financial instruments' declining in value does not indicate a failure of markets or of Wall Street. Market institutions deal with certain types of risks, but they were never designed to guarantee success, and one should not be surprised if investments such as intentionally riskier CDOs fall in value. Many investors in housing securities thought that their returns would be better, but their underperformance did not reflect a problem with the market. When one set of prices declines relative to others, one should not conclude that the free market has failed or that regulations could prevent a decline next time.

Second, a contractual intertwining of firms' portfolio values so that the returns to one affect the returns to another does not indicate a failure of markets or of Wall Street. Credit default swaps enable firms to hedge against borrowers' failure to make debt payments. When the economy worsened and defaults rose, the firms that had been paid to assume risks had to assume them. A few, most notably AIG, did not have enough collateral and may have had difficulty meeting their obligations if enough of the loans they were insuring had defaulted. But credit default swap markets exist because firms know that any counterparty, including sellers of credit default swaps, might be unable to pay. To eliminate such a problem, buyers and sellers of credit default swaps devised complex collateral and netting arrangements that helped ensure that almost all credit default swap contracts would pay. Rather than causing the financial crisis, credit default swaps saved risk-averse investors a lot of money.

Third, when investors chose not to purchase widely available private protections against fraud and subsequently encountered problems, this choice was not a failure of markets or of Wall Street. From more debatable cases of fraud—such as "liar" loans where investors knew they were buying low-documentation loans—to the most outright fraud perpetrated by Bernie Madoff, certain investors put their money in less-safe investments, and sometimes they lost. Yet, investors who bought fully documented loans and hedge-fund investors who paid for third-party administrator services bought more protection, encountered lower failure rates, and were not exposed to Madoff-like problems. Private solutions already existed, but similar to locks on homes, they were never meant to (1) guarantee the value of one's possessions, (2) eliminate the need for insurance or payouts in the event of problems, or (3) safeguard property fully if one does use them.

Politicians have advanced a refrain that "greed and irresponsibility on Wall Street" caused the crisis (Forty-Fourth President of the United States 2008a),[1] and reactions range from Occupy Wall Street-style statements like, "Why isn't Wall Street in jail?" (Taibbi 2010b), to the technocratic regulations in the Dodd-Frank Act, which after three years was less than 40% complete and responsible for 13,789 pages of new regulations (Schroeder 2013). Yet, almost all of the criticisms and new regulations stem from a fundamental misunderstanding of what financial markets were designed to do. Whether the new regulations mandate that securitizers retain 5% of the securities that they originate on their balance sheets, mandate that derivatives contracts be traded through a central exchange as opposed to over the counter, restrict what assets financial firms can own or trade, or require firms to register and report numerous activities to the Securities and Exchange Commission, advocates of the regulation always assume the efficacy of the regulation and ignore the costs. Four decades ago, George Stigler (1975, p. 87) wrote, "(1) it is possible to study the effects of public policies, and not merely assume that they exist and are beneficial, and (2) grave doubts exist whether, if account is taken of costs of regulation, the SEC has saved the purchasers of new issues one dollar." Pointing the finger at Wall Street when asset prices decline is a common political strategy used to justify more regulatory control or to distract attention when government policies harm markets.

Public choice economists have documented various policies that may have caused or exacerbated the economic downturn. Schwartz (2009) argues that expansive monetary policy and government mandates to increase homeownership rates were a primary cause of housing price run-ups. Taylor (2009) argues that a low federal funds rate and monetary excesses led to a housing boom and subsequent bust, and Iqbal and Vitner (2013) find evidence for that position. Congleton (2009, 2012) discusses how government policies in the housing market affected economy-wide variables, and Boettke and Coyne (2011) argue that recent events show the ineffectiveness of Keynesian policies in preventing downturns.

Public choice economists have also documented policies that may have worsened the economic downturn after it began. Dorsch (2013) describes the bailouts in 2008 as special-interest legislation, and I agree with that description. A more accurate description, however, of what he characterizes as a "vote to save Wall Street" is a vote to give money to a few firms, often at the expense of other firms on Wall Street or the market overall. The 2008 Troubled Asset Relief Program (TARP) forced many healthy banks to accept bailout "loans" that the government later changed into warrants that banks had to buy back for more than they initially received. Smith, Wagner, and Yandle (2011) point out that Wall Street is not monolithic and that not all firms benefit from government's actions. To Young and Sobel (2013), the 2009 stimulus actually was not a stimulus at all; rather, it was a set of targeted handouts. Coyne (2011) argues that politicians often use crises to rearrange property rights, which does nothing to address the current crisis or future ones. Epstein (2014) makes the case that Fannie Mae and Freddie Mac actually were not insolvent when the United States Treasury hastily nationalized them with little regard for shareholders. When government assumes the authority to change management without consulting shareholders or to change contractually agreed-upon shareholder and creditor priority, firms and investors lose. A survey by the Securities Industry and Financial Markets Association reports "that 94 percent

[1] A more sophisticated variant of the "Wall Street is to blame" thesis is the "originate to distribute" thesis, which posits that banks stopped caring about asset quality because they were not keeping on their books all of the loans they originated (Financial Crisis Inquiry Commission 2011, p. 89). The *New York Times* (Morgenson and Story 2009) article, "Banks bundled bad debt, bet against it and won" is representative. For a discussion and critique, see Gorton (2010).

of securities firms and banks found the TARP lacking in clarity about its operations" (Taylor 2009, p. 29). To Boettke (2010), the highly interventionist response to the crisis simply made it worse; to Mulligan (2012), numerous other regulations are responsible for the economy's poor performance; and Higgs (2013, p. 315) states, "I have repeatedly suggested that regime uncertainty deserves serious consideration in our attempts to understand the economy's present sluggishness."

Research by these economists poses an alternative to the more popular refrain that "greed and irresponsibility on Wall Street" caused the crisis. But while previous economic research has focused on the potential role of government failure during the economic downturn, no one has studied the relative success of market institutions during the same episode. This article makes the case that even during a major economic downturn, complex financial markets worked remarkably well. Despite the rapid changes in monetary and regulatory policy, most mortgage-backed securities, collateralized debt obligations, credit default swaps, and other exotic financial derivatives were responding to market conditions and functioning as designed.

2 Mortgage-backed securities and CDOs worked as designed

Many malign mortgage-backed securities and collateralized debt obligations, but few understand them. Critics often refer to them as "toxic assets," "ticking time bombs," or a "house of cards" (Mah-Hui Lim 2008, p. 4). Posner and Weyl (2013) propose an "FDA for the Financial Market" to review and ban entire classes of derivatives,[2] and the Dodd-Frank Act imposes many restrictions on these financial instruments (for example, mandating that securitizers retain 5% of the securities they originate on their balance sheets). Yet, far from being a "doomsday machine" (Lewis 2010), people invested in these assets with good reason.[3]

Originators create asset-backed securities by pooling a set of assets, such as home, auto, or credit card loans, which generates an income stream. Mortgage-backed securities are a common type of asset-backed security that investors value based on property types, borrowers' credit scores, loan terms, loan-to-value ratios, loan-to-income ratios, and any other characteristics that investors deem important. Securities based on prime debt are less risky but have lower interest rates than ones based on subprime debt.[4] Originators can then slice (tranche) mortgage-backed securities and combine various slices to create CDOs. These instruments allocate various risks, such as default or loan prepayment, and prioritize income streams. Imagine creating a pipeline with two sequential outlets at which the first (the senior investors)

[2] Posner and Weyl (2013, p.1137) describe "the infamous CDOs of Asset-Backed Securities" and conclude, "given the numerous and clearly identifiable harmful uses and the tightly limited upside, it seems clear that a well-run agency would have rejected the introduction of such derivatives, had they been proposed for approval."

[3] Lewis's (2010) bestseller, *The Big Short*, highlights how investors like Greg Lipmann profited by shorting mortgage-backed securities before the downturn, but Lewis has yet to highlight that Lipmann is long in many of these securities today.

[4] Prime borrowers typically have credit scores of 660 or more and a loan to value ratio of 80 percent or less. Ezarik (2005) writes, "In general, banking regulators consider subprime borrowers as those with: a FICO [Fair Isaac Corporation] score of 660 or lower; two or more 30-day delinquent payments in the past 12 months, or one 60-day delinquency in the past 24 months; a foreclosure or charge-off in the past 24 months; any bankruptcy in the last 60 months; qualifying debt-to-income ratios of 50 percent or higher; limited ability to cover monthly living expenses."

gets its allotment before the second (the junior investors). Or, restated, imagine the junior tranche, the first-loss investors, agreeing to absorb losses if between 0% and 50% of loans do not perform, and if more than 50% of the loans do not perform, the senior tranche starts absorbing losses, too. In exchange for the higher priority and safety, senior investors earn lower interest rates, which amounts essentially to senior investors paying junior investors to absorb losses first. Mortgage-backed securities and CDOs usually have many tranches, often labeled "senior," "mezzanine," and "equity" or "first-loss," and the more layers there are below the senior tranches, the safer the senior tranches become. More complex, and potentially riskier, CDOs (e.g., CDOs squared and synthetic CDOs) can be created by pooling and slicing any combination of CDOs or other derivatives.

These new types of property rights with prioritized income streams attracted investors with different risk tolerances. The market was expanding, and in 2006, originators issued $2 trillion in mortgage-backed securities, $1.25 trillion in other asset-backed securities, and $950 billion in CDOs (Hordahl and McGuire 2007, p.11) making the market for these instruments larger than the corporate bond market. In the long run, a high percentage of housing-related securities actually were good investments, but from 2006 through 2008, housing prices fell, defaults on mortgages rose, and investors who agreed to assume certain risks ended up having to assume them.

We now know that Bear Stearns and Lehman Brothers made highly leveraged investments in mortgage-backed securities and CDOs that turned sour, and those choices contributed to these firms' demise. Some choices might have been good bets ex ante, but turned out to be bad ex post. A fair-odds bet does not guarantee a winning wager. Other choices might have been fine for the long term, but quite illiquid in the short term, and of little assistance to help firms weather the 2008 economic storm. Most importantly, however, markets (and any conceivable economic system) do not guarantee that everyone accurately forecasts the future. Some firms employed seemingly sophisticated models that used past data as predictors of future risks (Stiglitz, Orszag, and Orszag 2002) and did not consider the possibility that housing prices would veer away from their historical rates of appreciation. When the world turned out differently than these firms' models predicted and firms' investments were not as safe as previously thought, short-term lenders stopped extending credit in what Gorton (2010) and Duffie (2011) describe as being similar to depositors withdrawing funds or making a run on a bank.[5]

Although underlying mortgages performed worse than many investors predicted, mortgage-backed securities and CDOs designed to be less risky were, and those designed to be more risky also were. Even if the Standard and Poor's and Moody's ratings models could have been better,[6] in any given quarter during the economic downturn, banks' foreclosure starts for prime fixed-rate mortgages comprised only 1% of loans (Figure 1). Comparable figures for prime adjustable-rate mortgages and subprime fixed-rate mortgages made up only 2% to 3% of loans, and in a statistic that should surprise no one, subprime adjustable-rate mortgages had the highest rate of foreclosure starts. Among Fannie Mae-backed loans, the cumulative default rate, which includes homes sold in short sales and other transactions that do

[5] Many asset-backed securities and CDOs were special-purpose vehicles that depended on short-term debt for funding, and, similar to a bank that holds less than 100% reserves, had the potential to be exposed to problems when short-term lending (or deposits) fell. I thank an anonymous referee for highlighting this point.

[6] After the economic downturn, the rating agencies downgraded many tranches and securities, yet 87% of Moody's Aaa rated collateralized loan obligations kept their original ratings, and 98% kept their original ratings or were downgraded only by one level. Among Aa2 and A2 collateralized loan obligations, the majority either kept their original ratings or were downgraded by one level (Sober Look 2012), indicating far-from-perfect foresight but not wildly incorrect ratings.

not result in a total loss, has remained well below 5% of loans for all vintages except 2005, 2006, and 2007, where cumulative default rates were 7%, 11%, and 12% as of 2013 (Fannie Mae 2013, p. 16). Such default rates are higher than Fannie Mae predicted, but not catastrophically off base. For Fannie Mae loans overall, the serious delinquency rate (homes in foreclosure plus mortgages 90 days past due) rose from 2% in 2008 to 5% in 2009 and fell back toward 2% by 2013 (Fannie Mae 2013, p. 13), hardly a failure of capitalism.

[Insert Figure 1 about here]

Moreover, like a bond, the price of a mortgage-backed security or CDO varies, so when the security's value falls, the interest rates associated with it rise. Consider, for example, the performance of one mortgage-backed security, JPALT 2006-S1 1A11, consisting of low-documentation loans, many of which were originated in California and Florida. When 21% of the security's loans experienced late payments, the security's value fell to 70% of par (Ahmed 2012). Initial investors ended up with a security worth 30% less than predicted, and subsequent investors could buy a now higher-yielding security. What is the problem?

With any income-generating security, one must evaluate long-run prices and payouts rather than focusing solely on declines during a downturn and concluding that "the loans were structured to go bad" (Lewis 2010, p. 25). Figure 2 shows the growth from 2004 through 2014 of $10,000 invested in mortgage-backed securities funds from BlackRock, JP Morgan, Legg Mason Western Asset, PIMCO, Prudential, and Vanguard (BGPAX, OMBAX, SGSYX, PTRIX, TGMBX, and VMBIX). While a $10,000 investment in high-yield municipal bonds would have increased to $14,334 during this time, a $10,000 investment in mortgage-backed securities would have increased to between $15,964 and $16,540, depending on the fund chosen. Yet, no one says that the municipal bond market failed or that it should be heavily regulated because municipal bonds underperformed (not to mention had a much higher variance) relative to mortgage-backed securities.

[Insert Figure 2 about here]

Far from being a "fictitious Ponzi scheme" (Lewis 2010, p. 158), long-run investments in mortgage-backed securities performed well overall. But just as not every stock performs at the industry average, the same is true of housing investments; and junior tranches and CDOs associated with subprime loans issued in 2006 and 2007 performed particularly poorly. Financial information services firm Markit Group's indexes for interest-only loans issued in early 2006 to borrowers with Fair Isaac Corporation (FICO) credit scores below 660 show that the higher-rated securities (ABX.HE.AAA.06-1) fell to 60% of par by 2008 and recovered to 90% of par by 2010. The lower-rated subprime securities fared much worse, with BBB− securities permanently losing around 95%. Such losses will not bankrupt a diversified investor, but they can easily wipe out highly leveraged investors with elevated exposure to such products.[7]

[7] Imagine a leveraged investment that starts with $100,000 from investors and borrows $900,000 in short-term markets to buy $1 million of mortgage-backed securities. If the $1 million gains 10%, or $100,000, the payoff to investors is high, but a $100,000 depreciation would wipe out investor equity completely. Lenders in overnight debt markets, or repurchase agreement (repo) markets, get repaid, and investors bear all of the losses, exactly as they agreed.

One might feel bad for highly leveraged or undiversified investors who lost money investing in BBB− rated subprime debt, but they assumed those risks willingly.

Figure 3 shows the percentage of CDOs whose collateral was based on subprime mortgages or other CDOs, and Figure 4 shows the percentage of CDOs whose collateral ended up in default. Where the noneconomist looks at any failure and declares that the originators intended the instruments to fail (Lewis 2010, p. 25), the fact that in a major downturn only 10% of Goldman Sachs-underwritten CDOs and 30% of Bear Stearns-underwritten CDOs had collateral in default actually could indicate that these firms were too conservative. Nobody claims market failure if 50% of new restaurants fail or if 75% of Silicon Valley start-ups fail. Wall Street firms and investors that sought out riskier housing securities had the potential to gain or to lose more than investors who chose safer assets, and everyone knew that.

[Insert Figure 3 about here]

[Insert Figure 4 about here]

From an economic standpoint, there was no market failure. Supply and demand were moving toward balance. That said, numerous factors, including government policy, affected where the securities ended up equilibrating. The government's choice to keep interest rates at historic lows and then quickly quadruple the federal funds rate may have turned out to be procyclical (Allison 2013, p. 28; Selgin 2013). The government's policies to increase homeownership rates among low-income households that defaulted at higher rates may also have exacerbated the price swings of housing-related securities (Allison 2013, p. 268; Gorton 2010, p. 66).

Government accounting rule changes coupled with capital requirements almost certainly made the prices of housing-related securities more volatile. Consider the effects of the FAS 157 mark-to-market accounting rule that, in September 2006, the Financial Accounting Standards Board announced would require banks to value at "market" price all assets, even highly illiquid assets and assets that banks had no desire to sell immediately (Gorton 2010, p. 130). The following example illustrates potential problems with the rule. You and your neighbor each paid $1 million for identical homes. Your neighbor needs to sell his home tonight and agrees to a fire-sale price of $100,000. The "market" price of your home now reflects this $100,000 sale. Paper losses like this one do not matter to individuals who plan to stay in their homes. Under FAS 157, however, they do matter for banks that have capital requirements and that must update constantly the market price of any illiquid mortgage-backed securities or CDOs on their books. If a security must be sold today, then the current distressed price is the correct price to use, but if the bank plans to hold a security that is generating perfectly good income, the distressed price does not reflect how the bank really values that asset. As Gorton (2010, p. 128) explains, "With no liquidity and no market prices, the accounting practice of marking-to-market became highly problematic and resulted in massive writedowns based on fire-sale prices and estimates. Collateral calls, also based on marking-to-market, were massive, creating liquidity problems."[8] Less capital on books required major reductions in

[8] Gorton (2010, p. 132) writes, "Marking-to-market, however, implemented during a panic, has very real effects because regulatory capital and capital for rating-agency purposes is based on GAAP [Generally Accepted Accounting Practices]. There are no sizable platforms that can operate ignoring GAAP capital. In the current situation, partly as a result of

lending, which negatively affected all markets that depended on short-term financing, including markets for mortgage-backed securities and CDOs.[9] Even the safest repurchase agreements, the equivalent of short-term lending where borrowers hand over more than 100% collateral, saw liquidity decrease.

Allison (2013), Epstein and Henderson (2011), Forbes (2008), Isaac (2008), and McTeer (2009) also suggest that the mark-to-market mandate for valuing regulatory capital led to numerous problems, and a PricewaterhouseCoopers (2010) survey of investment professionals found that the majority preferred using multiple methods of valuing assets rather than relying solely on mark-to-market. Financial Executives International, the American Institute of CPAs, and many other industry groups opposed the mandate, and on April 2, 2009, the government relaxed this imposition for illiquid markets, implicitly recognizing that it was a bad idea. That credit markets exhibited problems shortly after the government imposed the rule and started recovering shortly after the government relaxed compliance requirements for the rule has led some to suggest that the mandate was a tremendously costly experiment (Financial Times 2010; First Trust Advisors 2010).

The promise and implementation of many costly regulations also affected where housing securities were equilibrating. The government's nationalizing of firms, changing of contractually agreed creditor priorities, and forcing of banks to accept loans that it changed into partial ownership also made banking more difficult (Allison 2013; Epstein 2014; Zingales 2009). Regime uncertainty (Higgs 1987) is not good for markets because investments become less safe and, according to Baker, Bloom, and Davis's (2013) measurements, policy uncertainty has doubled over the past five years. Mulligan (2012, p. 270) argues that many of the financial problems did not cause the economic downturn, but bad regulations worsened them. The prospect of a new regulatory agency designed by a politician who stated, "I created much of the intellectual foundation for what [Occupy Wall Street protestors] do" (Elizabeth Warren quoted in Johnson 2011), and a president who said to Occupy Wall Street protestors, "You're the reason that I ran for office" (Real Clear Politics 2011), meant that financial markets incorporated into asset prices any anti-Wall Street policies. As underlying conditions of the world change, the values of assets change, so one should not claim that markets themselves failed because many market prices fell.

3 Credit default swaps worked as designed

Another maligned but misunderstood contract is the credit default swap (CDS). CBS's *60 Minutes* describes credit default swaps as "the bet that blew up Wall Street" (CBS News 2008), and Phillip Angelides, chairman of the Financial Crisis

GAAP capital declines, banks are selling assets or are attempting to sell assets—billions of dollars of assets—to 'clean up their balance sheets,' raising cash and de-levering. This pushes down prices, and another round of marking down occurs, and so on. This downward spiral of prices—marking down, selling, marking down again—is a problem."

[9] The Securities and Exchange Commission (2008, p. 182) also writes, "Significant concerns have been raised that fair value accounting can induce a pro-cyclical downward pressure in asset prices, leading security prices and asset values to fall considerably below what some believe is their true 'fundamental value.' Further, concerns have been expressed about the fact that, in order to offset the write-downs caused by the fair value accounting for their investment securities, financial institutions may have been compelled to sell securities in illiquid markets (despite the institutions' original intentions to hold those assets until maturity or recovery) or raise capital in a challenging environment. In illiquid or distressed markets, these forced sales may further weaken the market for the securities and reduce the resulting price for the observed trades, compelling additional sales to raise capital."

Inquiry Commission, describes them as the equivalent of "selling a car with faulty brakes and then buying an insurance policy on the buyer of those cars" (Sorkin 2010, p. A1). Many portray credit default swaps as a way for banks to externalize the costs of poorly underwritten loans (Murdock 2013), and reactions range from Posner and Weyl's (2013, p. 23) "If we imagined the CDS as being proposed for the first time by a financial innovator, we would expect the [Financial Products Agency] to treat it skeptically" to George Soros's "CDS are instruments of destruction which ought to be outlawed" (CNN Money 2009).

The Dodd-Frank Act (Sec. 723, H. R. 4173) includes many regulations of credit default swaps, including mandating the use of derivatives clearing associations and limiting who can participate in the market. But far from being a form of gambling or a way to externalize costs, credit default swaps are like insurance, where buyers of protection pay sellers of protection to assume the risk of a party who owes money (the reference entity) having a credit event such as default. Credit default swaps can be sold on home, corporate, government, or other debt, and far from externalizing costs, the riskier the contract is, the higher is the premium. Buyers of protection typically pay premiums quarterly to sellers of protection and negotiate premiums based on estimates of both how much the reference entity will not repay and how much the seller of protection will be able to pay.[10]

Credit default swaps help firms mitigate certain risks, but they were never meant to eliminate all risks or the need for payouts if problems occur. Buyers of protection retain the risk that the seller of protection will be unable to pay if the reference entity defaults, but buyers take many steps to reduce the likelihood that the seller of protection will also default. At the contract stage, buyers of protection usually negotiate collateral requirements whereby the seller of protection places assets into an account that is often controlled by a third party or even the buyer. Similar to how a bank depositor theoretically can demand that the bank hold 100% reserves or a lesser percentage depending on its preferences to pay more fees versus assume some risks, buyers of protection can require collateral up to the full amount of the reference bonds (a more expensive arrangement), or they can require less.

For example, a buyer could pay a seller of protection $50,000 to insure $1 million, and require the seller of protection to form an investment vehicle with $1 million in cash deposited with a third party. Even if the reference loans default and have a recovery rate of zero, the buyer need not worry about whether the seller of protection has set aside enough money for the payout. A reference loan plummeting from being worth $1 million to $0 is possible but unlikely, so credit default swap contracts are often more lightly collateralized. Buyers and sellers negotiate the exact amount of the collateral based on how reliable the buyer considers the seller (International Swaps and Derivatives Association 2009) and based on how much they believe the reference debt's value is likely to vary in the short run. Pay-as-you-go credit default swaps require the seller to pay the buyer a small amount each time the value of the reference debt has a small write-down (and the buyer has to pay back a small amount each time there is a principal write-up) (Nolan and Dodson 2007; Sahajwani 2011), so big, unfunded surprises in this market are less likely. Other contracts require payments to a

[10] Third parties who care about a reference entity defaulting can also buy protection. Although critics disparage "naked credit default swaps" as equivalent to buying insurance on someone else's health, such contracts allow firms to hedge their position if their well-being is affected by others defaulting. Goldman Sachs, for example, was highly dependent on the market for housing-related securities, but it also hedged in case many loans in that market defaulted. Naked credit default swaps also enable synthetic CDOs to offer various amounts of protection. For an excellent overview of credit default swaps, see Stulz (2010).

margin account as the value of the reference debt changes. With frequent payments and enough of a buffer, buyers of protection can reestablish new contracts with other sellers of protection even if the original seller goes out of business.[11]

To see how well these markets worked, let us look at the credit events that occurred when the United States Treasury nationalized Fannie Mae and Freddie Mac on September 8, 2008. Even though many people thought that Fannie Mae and Freddie Mac were immune to a credit event, prudent Wall Street firms hedged their bets, and active credit default swap markets for Fannie Mae and Freddie Mac debt existed.[12] By the time the Treasury nationalized Fannie Mae and Freddie Mac, the gross notional value of credit default swaps referencing Fannie Mae and Freddie Mac exceeded $1.4 trillion, leading one analyst to state, "The market is not experienced at settling a credit event for a name of this size, so it is a bit of an unknown" (Biggadike and Harrington 2008). Yet, the private International Swaps and Derivatives Association (ISDA) had developed a framework for what turned out to be an orderly procedure for netting what a firm was required to pay or entitled to receive.[13] Before 2006, credit default swap contracts often required physical settlement, whereby buyers of protection delivered the bonds having a credit event to the seller of protection, who paid the full price of the obligations. But if more credit default swap contracts exist than the number of bonds available, a rush to continue repurchasing those bonds for settlement could occur. To prevent such a problem, the ISDA's processes rely on cash settlement, in which the seller of protection simply pays the difference between what a debt currently is worth and par (Congleton 2009; Deng, Gabriel, and Sanders 2008). The ISDA helps to determine what sellers of protection owe buyers of protection through an auction of some of the debt in default. In the respective cases of Fannie Mae and Freddie Mac, bondholders with $1.00 bonds had bonds worth $0.92 or $0.94, and thus were owed $0.08 or $0.06. In the case of Lehman's bankruptcy, bondholders with $1.00 of debt ended up having a bond worth $0.09 and thus were owed $0.91. Government bailouts and conservatorship affected the debt's value, but the netting process worked in each case.

What about the much-discussed failure of one of the largest sellers of credit default swaps, AIG? AIG actually never defaulted on its obligations, but it was having trouble meeting new collateral requirements triggered in contracts after AIG lost its AAA rating and the reference entities appeared more likely to default. In the long run, AIG may or may not have been able to pay had many reference entities defaulted, but in the short run, AIG likely would have had to wind down contracts and sell certain assets or face bankruptcy. In the fall of 2008, the government intervened and lent AIG billions (which have since been repaid) in what many portray as a backdoor bailout or guarantee for AIG's counterparties. Yet, even if AIG had needed to wind down contracts or if AIG's counterparties had not received 100% of the protection had credit events occurred, these events would not have indicated a failure of the CDS market.

Built into the price of each credit default swap is the recognition that "the protection buyer gives up the risk of default by the reference entity, and takes on the risk of simultaneous default by both the protection seller and the reference credit" (International Swaps and Derivatives Association 2014a). Credit default swaps exist because firms

[11] I thank an anonymous referee for encouraging me to highlight this point.

[12] In August 2008, five-year credit default swap contracts on Fannie Mae notes cost 364 basis points per year, or $36,400, to insure $1 million (Biggadike and Harrington 2008).

[13] As the International Swaps and Derivatives Association (2014b) explains, "notional amounts are only loosely related to risk. For most OTC derivatives, cash flow obligations are normally a small percent of notional amounts and so are mark-to-market exposures. Further, netting of obligations under a master agreement and collateralization of exposures reduces credit exposures to less than one percent of notional amount."

know that the default of any firm is possible because of unforeseen events, bad risk management, or bad business decisions, and AIG was no exception. AIG had an exceptionally risky business model, with one branch of the company insuring many subprime loans and another branch of the company investing in subprime loans (Stulz 2010, p. 83; International Swaps and Derivatives Association 2014a). Unlike other credit default swap dealers who "maintain 'matched books' that balance sold with bought protection so net exposure is low," AIG had "a 'one way' book consisting almost entirely of sold protection" (International Swaps and Derivatives Association 2009, p. 1). Such a strategy was very profitable when payouts were uncommon, but dangerous if economic variables veered away from AIG's models.[14]

One potential solution to AIG-like problems is to have parties make contracts through clearinghouses or exchanges that manage counterparty default risk. The Chicago Mercantile Exchange and the Intercontinental Exchange now clear tens of trillions of dollars of credit default swap contracts, an arrangement that will have many advantages moving forward. But parties that had made over-the-counter CDS also took many steps to manage counterparty default risk in case a counterparty like AIG failed.

For example, Goldman Sachs purchased credit default swap contracts from many sellers, as not having too much exposure to one firm is a fundamental principle of Financial Economics 101. Second, Goldman Sachs required AIG to post $7.5 billion in collateral in case the $10 billion in credit default swaps Goldman purchased came due. Third, Goldman spent $100 million to buy other protection if AIG could not pay its obligations. As Goldman Sachs (2013) states, "We did not take the creditworthiness of AIG for granted. On the contrary, our actions in the case of AIG are a good example of responsible risk management. . . . That is why we are able to say that whether it failed or not, AIG would have had no material direct impact on Goldman Sachs." But even if (1) 100% of the credit default swap contracts that AIG sold Goldman had experienced credit events (unlikely), (2) the recovery rate of all of the reference debt was 0% (unlikely), (3) the recovery rate for AIG obligations was also 0% (unlikely), and (4) Goldman had not required collateral or purchased protection against AIG's obligations, a $10 billion total loss to one firm would have been less debilitating than the billions that Wall Street firms have to bear in new regulations and fines. Doing business is inherently risky; adding government to the equation does not eliminate that risk.

One often hears politicians boasting that their regulations ensure that "we don't have another AIG" (Forty Fourth President of the United States 2010), but they do not discuss how "regulators have led investment banks to withdraw from the market and made trading credit-default swaps and other derivatives more expensive. . . . Regulations imposed after the financial crisis have helped shrink the corporate CDS market by half, to $13.2 trillion" (Childs 2014). The rationalization seems to be that because one firm practiced bad risk management and almost got into trouble, government should limit the credit default swap market severely. The lawmakers and regulators seem to ignore the costs of the restrictions and fail to weigh type I and type II errors.[15] The next time defaults occur, risk-averse investors will have to bear more losses, and one can be sure that political officials will blame Wall Street, not regulation.

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[14] One Goldman Sachs employee recalls a 2007 phone conversation in which the head of AIG Financial Products stated, "It is hard for us, without being flippant, to even see a scenario within any kind of realm or reason that would see us losing $1 in any of these transactions" (Bankers Anonymous 2012). But, as the Congressional Oversight Panel (2010, p. 7) correctly concluded, AIG's "insatiable appetite for risk and blindness to its own liabilities" ultimately brought it down.

[15] For a discussion of the importance of applying economic analysis to rules and regulations, see Leeson (2009).

4 Private certification services against fraud worked as designed

Firms like AIG, Bear Stearns, and Lehman Brothers lost money during the downturn, so the idea that they intended housing-related securities to decline is questionable. Bad business decisions or investment strategies not panning out does not indicate malfeasance. In other cases, however, the 2008 economic downturn exposed outright fraud, the most egregious of which was that of Bernie Madoff. Madoff had long operated an upstanding market-making operation, but he also operated a "hedge fund" that he claimed had no management fees, involved limited volatility, and consistently returned 1% *per month*. His fund went from having $6 billion in assets in 2001 to what he claimed was $65 billion by 2008 (Arvedlund 2001; Glovin 2009). The performance was fictitious, and Madoff was paying some investors with other investors' money. More than half of Madoff's investors received more than they put in originally, but after all was said and done, a $13 billion shortfall existed (Duffie 2011).

Hertz (2009) refers to Madoff as the "poster boy" of "the past era of capitalism. . . . An era whose fundamental assumptions were markets should be left to self-regulate, governments should be laissez-faire, and human beings are nothing more than rational utility maximizers." Before his inauguration, the president stated, "Madoff Investment Securities has reminded us yet again of how badly reform is needed when it comes to the rules and regulations that govern our markets. . . . Financial regulatory reform will be one of the top legislative priorities of my Administration," adding that his new rules would "crack down on the culture of greed and scheming that has led us to this day of reckoning" (Forty Fourth President of the United States 2008b).[16] I, in contrast, argue that although Madoff's fraud was significant, it shows neither the fatal flaws of capitalism nor the desirability of more regulation.

The first lesson is that the Madoff fraud shows regulators missing problems even when delivered to them on a silver platter. Despite the SEC's having a billion-dollar budget and conducting eight investigations of Madoff over the years, it "failed to follow incriminating evidence in plain sight" (Epstein 2014). In late 1999, an investment firm asked one of its analysts, Harry Markopolos, to see if the firm could replicate Madoff's returns. Madoff claimed that his "split strike conversion" strategy made money from owning stocks that track an index, selling out-of-the-money call options to generate income, and buying put options to limit downside losses.

Selling calls and buying puts associated with stocks is the common "using collars" strategy that limits both the downside and upside potential of owning stocks (Gaffen 2008). Markopolos's firm managed a fund that followed such a strategy. With five minutes of analysis, Markopolos concluded that Madoff's returns could not exist, and after four hours, he could demonstrate this mathematically (Markopolos 2009, p. 7). In 2000, Markopolos and colleagues sent the SEC a report stating that "the entire fund is nothing more than a Ponzi Scheme" (Kotz 2009, p. 7) and followed up with additional complaints, including a 2005 report, "The world's largest hedge fund is a fraud." *Barron's* also publicly questioned the hedge fund's annual returns averaging 15%, with extremely low variance and no down years (Arvedlund

[16] Since then, numerous regulations have been passed that require hedge funds to register with the SEC and "deliver an unprecedented breadth of information to the SEC," which KPMG (2012, p. 12) reports "creates unique challenges for the hedge fund industry, particularly since the scope of compliance extends beyond the traditional legal and compliance functions to also include finance, operations and others." Ernst and Young (2012, p. 3) reports on the regulations' "many ambiguous questions that will require significant discussion with outside counsel, accountants, other fund advisers, and the SEC."

2001). The financial newsletter *MAR/Hedge* discussed Madoff's skeptics, who were "baffled by the way the firm has obtained such consistent, nonvolatile returns month after month and year after year" (Ocrant 2001, p. 1).[17]

After the fraud came to light, the SEC's inspector general concluded, "Because of the Enforcement staff's inexperience and lack of understanding of equity and options trading, they did not appreciate that Madoff was unable to provide a logical explanation for his incredibly high returns" (Kotz 2009, p. 19). A good prior is that most government officials do not understand financial markets, and reading the inspector general's 450-page report confirms this. As Stigler (1975, p.176) points out, "The public agents, even though trained and diligent, are often very poorly situated to discover violations and never better situated than all other groups in the society."

If regulators did not observe this massive Ponzi scheme right in front of them, how likely are they to discover the more difficult-to-detect examples of fraud? Public choice economics highlights how bureaucrats look out for their own interests, including maximizing budgets or control, which does not necessarily translate into doing the job they are paid to do.[18]

The second lesson is that private mechanisms that easily could have prevented such fraud were available, and most other hedge fund investors used them, but Madoff's investors *chose not to* demand them. Although analysts questioned Madoff's returns, none of his investors demanded the private third-party administration and accounting services that other hedge funds used. In 2001, when *MAR/Hedge* asked Madoff about his returns, it reported: "Madoff is willing to answer each of those inquiries, even if he refuses to provide details about the trading strategy. . . . The strategy and trading, he says, are done mostly by signals from a proprietary 'black box' system" (Ocrant 2001, p. 3). To *Barron's*, Madoff said, "It's a proprietary strategy. I can't go into it in great detail" (Arvedlund 2001). *Barron's* also reported one investor's account:

> What Madoff told us was, 'If you invest with me, you must never tell anyone that you're invested with me. It's no one's business what goes on here,' … When he couldn't explain [to my satisfaction] how they were up or down in a particular month I pulled the money out." (Arvedlund 2001)

Madoff provided no electronic access to the securities in anyone's account, and his "auditing" firm had only three employees: an accountant, a secretary, and a retired partner living in Florida who was Madoff's friend of 50 years (Abkowitz 2008; Gandel 2008). The SEC (Kotz 2009, p. 5) reports that "numerous private entities conducted basic due diligence of Madoff's operations and . . . came to the conclusion that an investment with Madoff was unwise." Massachusetts regulators were correct to chide one of his biggest investors, who "did not engage in any meaningful due diligence and turned a blind eye to any fact that would have burst their lucrative bubble" (quoted in Madigan 2009). One should not blame the victims, but Madoff's clients did not request the safeguards other investors used, and his "multibillion-dollar Ponzi scheme reinforces classic investment advice: If it sounds too good to be true, it probably is" (Arends 2008).

Madoff was not just the decision maker guiding his "investment" strategy but also the trader and custodian of assets, so if one branch of the fund was acting fraudulently, nobody could see it. Even though the hedge fund industry

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[17] When the SEC asked how such returns were possible, Madoff responded, "Some people feel the market. Some people just understand how to analyze the numbers that they're looking at" (Kotz 2009, p. 19).

[18] Stigler (1975, p. 169) says that one should always ask the following questions about regulators: "Is he qualified? Is he given proper incentives? Is there an audit of his performance? And, is it possible to challenge failures or weaknesses in his performance?"

lacks many disclosure requirements, investors commonly demand that third-party administrators and custodians hold assets and provide information about fund activity.[19] Third-party administrators create various checks to prevent the misuse of investors' assets and have a limited incentive or ability to walk off with those assets.[20]

As Belmont (2011) explains, "Robust internal controls and procedures should be in place over each stage of the trading cycle: trade authorization, execution, confirmation, settlement, reconciliation, and accounting. A breakdown in this separation of duties seems to have been a factor in almost every fraud-related fund failure." Madoff used none of these controls and procedures. One of my friends who worked in the third-party administrator industry said, "When the Madoff story broke, we were actually happy because we knew it would be a huge increase in the demand for our services" (personal interview, Arlington, Virginia, September 27, 2013). The scandal was a big "I-told-you-so" moment for the third-party administrators. In 2006, 75% of hedge funds used third-party administrators in some capacity, and that figure increased to 91% by 2011 (BNY Mellon 2012, p. 2; see Figure 5). The potential for fraud will always exist, but like locks on houses, third-party administrators make fraud more difficult. Failing to pay for locks or for various levels of protection may be a failure of good judgment, but it is not a failure of markets or of Wall Street.

[Insert Figure 5 about here]

Much of this analysis of Madoff's outright fraud also applies to the less-egregious or more-debatable examples of fraud that surfaced in the wake of the 2008 economic downturn. Investors in all areas have a choice of paying for more documentation or assuming certain risks. For example, Black (2013) claims that 90% of low-documentation loans (so-called "liar loans") were fraudulent because borrowers overstated income, and the United States Treasury's suspicious activity reports say that mortgage-related fraud increased by 40 times between 1996 and 2009 and was responsible for $112 billion in losses (Financial Crisis Inquiry Commission 2011, p. xxii).

Some fraud will always exist. But much of what people are labeling fraud was either not fraud or entailed simple risks that investors knew about. Low-documentation loans are, by definition, loans where borrowers' income cannot be verified, and just as "junk" bonds are not really junk when investors know they are high-risk and potentially high-yield debt, "liar loans" are not really liar loans when investors know that they involve undocumented income and when higher interest rates reflect such risks. I doubt that a single Wall Street firm or investor that bought low-documentation loans was tricked into doing so. When buying a preowned car or home, most people pay a mechanic or inspector to evaluate the product, but when someone else chooses not to, it should not be considered a failure of the inspection market or of markets in general.

Investors who wanted to invest in fully documented loans had the option of doing so, and the same is true for investors in hedge funds that used third-party administrator and custodian services. Even though Madoff committed a

[19] Third-party administrators can be independent companies such as Citco Fund Services, or subsidiaries of banks such as Citigroup, Goldman Sachs, and JP Morgan. They can handle everything from back-office functions like accounting to managed accounts where the hedge fund manager becomes more like an advisor without control of the fund's assets (HFM 2010; Rose 2009).

[20] Hedge fund managers commonly have their own duplicate set of books that verify what information the third-party administrator provides, and they sometimes hire an additional administrator so that three independent parties verify the funds (Ernst and Young 2011; Groenfeldt 2013).

massive fraud, his $14 billion shortfall represents less than 0.5% of assets under management in the hedge-fund industry (and less than 0.05% of assets under management in North America [PricewaterhouseCoopers 2014, p. 10]). The Madoff fraud does not justify imposing billions of dollars of compliance costs on all hedge funds, which already had functioning, private solutions. A KPMG (2013, p. 27) survey of 200 hedge-fund managers found that "SEC registration [is] widely seen as [one of] the most onerous regimes with which to comply by survey respondents" and "the rising cost of compliance has created significant barriers to entry for small or new fund managers seeking to enter the market." Even though Madoff's claiming to have 20% more than he had is nothing to celebrate, a big shortfall at *one fund* does not justify forcing all hedge funds now to spend an average of 7% of their total operating costs (KPMG 2013, p. 4) on regulatory compliance.

5 Closing thoughts

Many asset prices declined in the 2008 economic downturn, most temporarily and some permanently, but just because problems exist with underlying variables does not mean that a lack of regulation caused those problems or that Wall Street failed. Riskier first-loss tranches of mortgage-backed securities and of CDOs based on them ended up bearing the first losses as designed. Credit default swaps paid almost all buyers as designed, and hedge funds that used third-party accounting, administrator, and custodian services prevented Madoff-like problems. When faced with the *possibility* of losing money from bad risk management or bad motives versus the *certainty* of losing money on costly and unproven regulations, I will opt for the former. According to Blair (2014), smaller banks are now spending as much as 15% of revenue on regulatory compliance.[21] Yet, advancing a refrain that "greed and irresponsibility on Wall Street created the financial crisis" helps public officials to justify large increases in government control.

As Stigler (1971, p. 3) wrote, "The state—the machinery and power of the state—is a potential resource or threat to every industry in society. With its power to prohibit or compel, to take or give money, the state and can and does selectively help or hurt a vast number of industries." The *Wall Street Journal* editorial board (2013) and *New York Post* editorial board (2013) describe the $22 billion in fines JP Morgan had to pay in recent years as "The Morgan Shakedown" and "Extorting Morgan." Add to those fines the criminal prosecutions of JP Morgan traders who lost money for their firm, and an SEC now headed by a former terrorism prosecutor who advocates waterboarding and force-feeding prisoners at Guantanamo (Calabresi 2014), and it is no wonder that markets get roiled. Top officials claim, "You never want a serious crisis to go to waste," as if they are using Higgs's (1987) warnings from *Crisis and Leviathan* as a normative guide.[22] But based on the reaction to the 2008 and all past economic downturns, I have two predictions

[21] One of my friends who works on Wall Street states, "The regulations have turned our industry upside down," and another states, "I don't much care what the eventual regulations turn out to be, I just wish they would stop changing them so much" (personal interviews, Boston and New York, June 2011 and November 2013).

[22] Buchanan and Wagner (1977[1999], p. 53) discuss how officials may create political business cycles, which in turn fosters "an antibusiness or anticapitalist bias in public attitudes, a bias stemming from the misplaced blame for the observed erosion in the purchasing power of money and the accompanying fall in the value of accumulated monetary claims. This bias may, in its turn, be influential in providing support to political attempts at imposing direct controls, with all the costs that these embody, both in terms of measured economic efficiency and in terms of restrictions on personal liberty." For a list of reasons why politicians may create a business cycle, see Aidt, Veiga, and Veiga (2011); Grier (1989); and Shughart II and Tollison (1985).

moving forward: (1) No matter how much public officials do to cause or worsen the next economic downturn, they will blame the free market and a lack of regulation, and (2) they will implement new regulations that will be more onerous and that will do nothing to prevent the next economic downturn.

Acknowledgments

I thank Peter T. Leeson, William F. Shughart II, Peter J. Boettke, Amy Fontinelle, two anonymous referees, and members of the Financial Policy Council for helpful comments and suggestions.

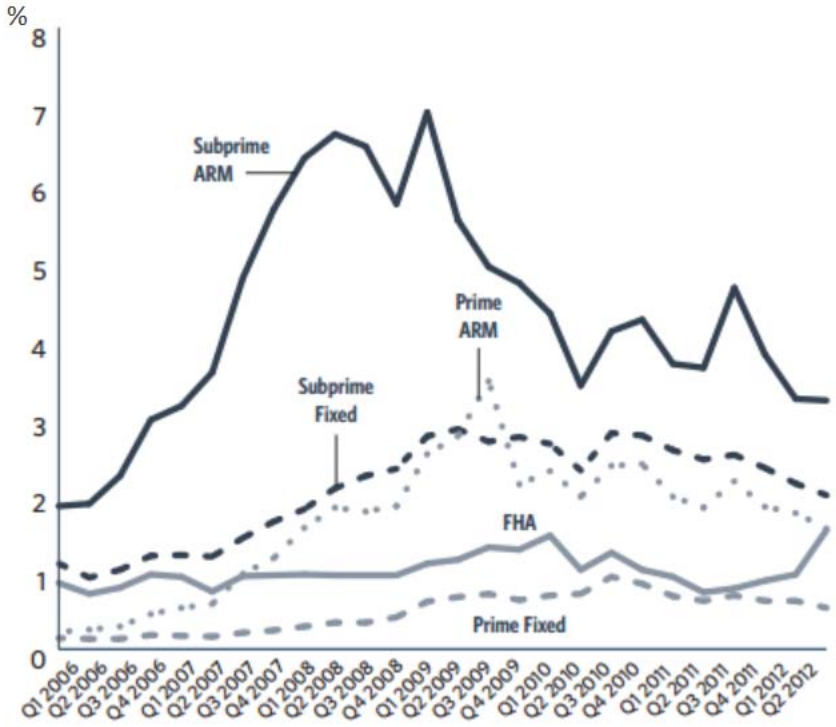

Fig. 1 Foreclosures started by loan type, quarterly (2006–2012)

Source: Mortgage Bankers Association (2012)

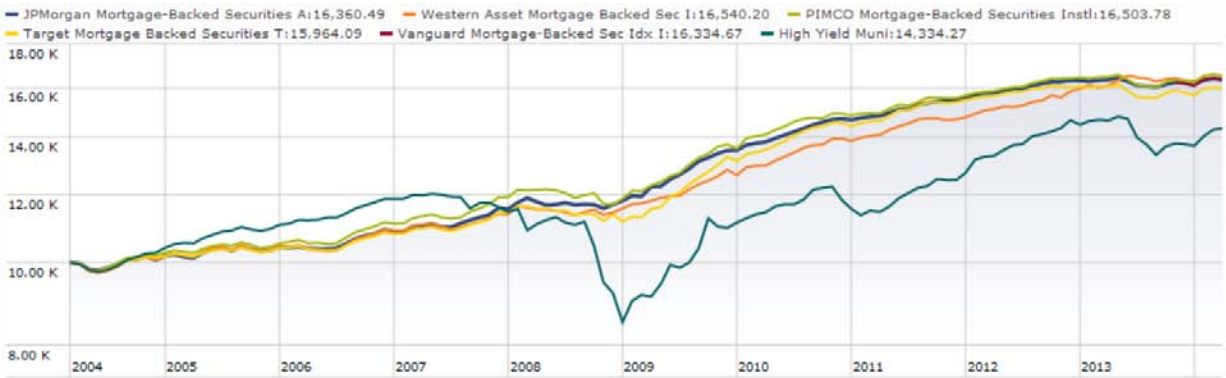

Fig. 2 Value of $10,000 invested in mortgage-backed securities funds compared with $10,000 invested in high-yield municipal bonds (2004–2014)

Source: Morningstar, Inc.

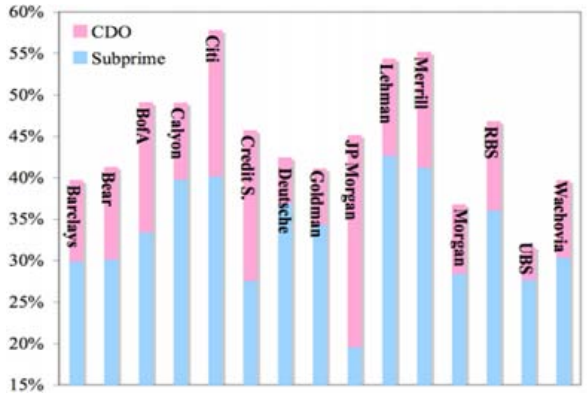

Fig. 3 Percentage of underwriters' collateralized debt obligation assets that were based on subprime mortgages or other collateralized debt obligations

Source: Barnett-Hart (2009, p. 33)

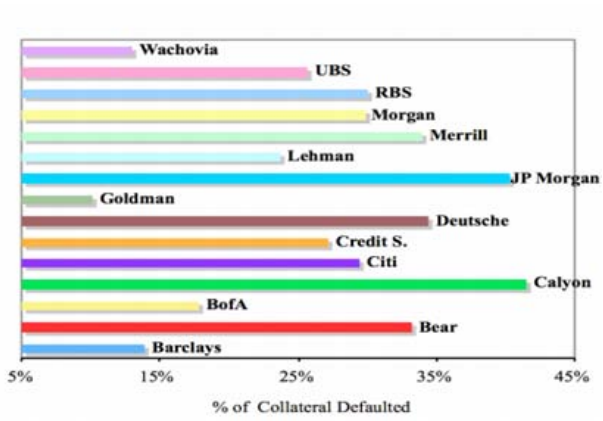

Fig. 4 Percentage of underwriters' collateralized debt obligations whose collateral had defaulted by December 2008

Source: Barnett-Hart (2009, p. 33)

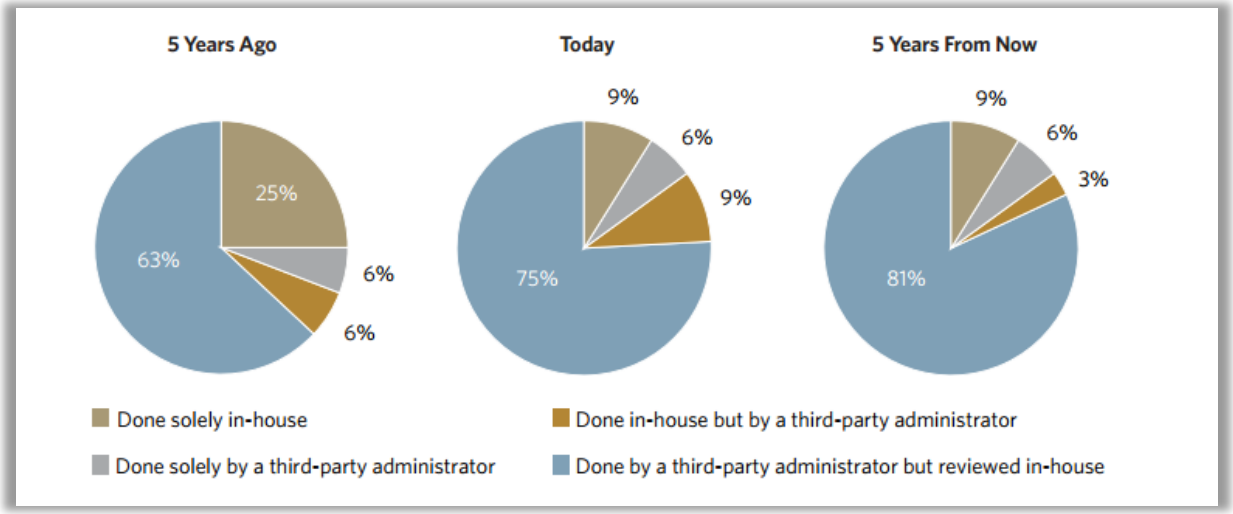

Fig. 5 Hedge fund reliance on third-party administrators (2004–2013)

Source: BNY Mellon (2012)

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